Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Remote plasma assisted growth of graphene films: structure and physical properties SERGEI ROUVIMOV, GOPICHAND NANDAMURI, RAJ SOLANKI, Portland State University — The unique electrical properties of graphene, in particular ballistic transport and tunable transport properties have opened up exciting possibilities for this material as a replacement for silicon [1-2]. While graphene is commonly produced in research laboratories by mechanical exfoliation of highly oriented pyrolytic graphite, mass production of graphene-based devices requires technological approach to synthesize thin graphene films such as chemical vapor deposition. In present work, single and multiple layers of graphene films were grown on (111) oriented single crystals of nickel and polycrystalline nickel films using remote plasma assisted chemical vapor deposition. Remote plasma was employed to eliminate the effect of the electrical field on the orientation of the grown graphene films, as well as reduce the growth temperature compared to conventional chemical vapor deposition. The electrical and optical properties, including high resolution transmission electron microscopy of these films, suggest that this approach is both versatile and scalable for potential large area optoelectronic applications.

[1] T. Ohta, et al. *Science* 2006, **313,** 951- 954
[2] Y. B, Zhang, et al. *Nature* 2005, **438,** 201- 204

Sergei Rouvimov
Portland State University

Date submitted: 09 Dec 2009 Electronic form version 1.4